



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,820	11/13/2003	Roy Payne	JHN-839-1521	.7850
30024 7590 07/25/2007 NIXON & VANDERHYE P.C. 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			EXAMINER JOHNSON, EDWARD M	
			ART UNIT 1754	PAPER NUMBER
			MAIL DATE 07/25/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/705,820

Applicant(s)

PAYNE ET AL.

Examiner

Edward M. Johnson

Art Unit

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 25-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 5, 10-11, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Widmer et al. US 6,474,271.

Regarding claim 1, Widmer '271 discloses a method for decreasing nitrogen oxides from a combustion system comprising:

- a. forming a combustion flue gas in a combustion system (column 1, lines 13-19);
- b. providing overfire air and droplets of reducing agent into the combustion system (abstract and column 3, lines 29-35), wherein the droplets are small (see column 6, lines 54-65);
- c. mixing the overfire air and reducing agent with the combustion flue gas in the combustion system (abstract and column 3, lines 23-34) and heating to above an optimal temperature range (Fig. 1);
- d. heating to a temperature of over 1600 (Fig. 1); and
- e. continuing to increase the temperature (Fig. 1).

Regarding claims 5 and 10, Widmer discloses heating to over 2000 and an optimal temperature of about 1600 degrees Fahrenheit (Fig. 1).

Regarding claims 11 and 15, Widmer discloses spraying aqueous droplets (see column 3, lines 22-25) and providing overfire air and droplets of reducing agent into the combustion system (abstract and column 3, lines 29-35).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-4, 6-9, 12-14, and 16-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Widmer '271.

Regarding claim 19, Widmer '271 discloses a method for decreasing nitrogen oxides from a combustion system comprising:  
a. forming a combustion flue gas in a combustion system (column 1, lines 13-19); b. providing overfire air and droplets of reducing agent into the combustion system (abstract and column 3, lines 29-35), wherein the droplets are small (see column 6,

lines 54-65); c. mixing the overfire air and reducing agent with the combustion flue gas in the combustion system (abstract and column 3, lines 23-34) and heating to above an optimal temperature range (Fig. 1); d. heating to a temperature of over 1600 (Fig. 1); and e. continuing to increase the temperature (Fig. 1).

Widmer fails to specifically disclose an average droplet size of less than 50 microns.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the stoichiometric ratio and the average droplet diameter to 50-60 microns through routine experimentation because Widmer discloses controlling the amount of fluid and flow rate delivered (column 5, lines 21-29) and formation of fluid droplets is represented by the Raleigh-Weber equation (columns 3-4) and a fraction of drops are below 100 microns (column 6, lines 63-64).

Regarding claim 2, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the optimal temperature range occur in less than 0.3 seconds because Widmer '271 discloses continuous temperature increase on a graph and a single point where NO<sub>x</sub> is lowest, which would suggest, to an ordinary artisan, only an instant of when that exact temperature is achieved.

Regarding claims 3-4, 12-14, 16, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the stoichiometric ratio and the average droplet diameter to 50-60 microns through routine experimentation because Widmer discloses controlling the amount of fluid and flow rate delivered (column 5, lines 21-29) and formation of fluid droplets is represented by the Raleigh-Weber equation (columns 3-4) and a fraction of drops are below 100 microns (column 6, lines 63-64).

Regarding claims 6-9, 17-18, 21-22, and 24, it would have been obvious to inject the reducing agent and overfire air concurrently or mixed in the center and/or upper portion beforehand because Widmer discloses providing overfire air and droplets reducing agent into the combustion system (abstract and column 3, lines 29-35), wherein the droplets are small (see column 6, lines 54-65), mixing the overfire air and reducing agent with the combustion flue gas in the combustion system (abstract and column 3, lines 23-34); and injection in a center upper portion with respect to the injection (Fig. 2).

Regarding claim 20, Widmer '271 discloses ammonia, urea, cyanuric acide, or other compounds (see column 1, lines 63-67).

Regarding claim 23, Widmer discloses heating to over 2000 and an optimal temperature of about 1600 degrees Fahrenheit (Fig. 1).

***Response to Arguments***

5. Applicant's arguments filed 5/7/07 have been fully considered but they are not persuasive.

It is argued that Widmer '271 does not... nitrogen oxide reduction. This is not persuasive because Applicant does not claim any specific temperature range and Widmer discloses heating to over 2000 and an optimal temperature of about 1600 degrees Fahrenheit (Fig. 1). It is noted that the features upon which applicant relies (i.e., a particular temperature range more specific than that of the prior art) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

It is argued that Widmer '271 teaches away... a narrow temperature range. This is not persuasive for the reasons above and because Widmer does not "teach away" from Applicant's temperature because Widmer nowhere teaches that Applicants temperature should be avoided.

It is argued that the PTO Action identifies Figure 1... method claim 1. This is not persuasive for the reasons above. No particular temperature range is claimed.

It is argued that independent claim 15... an optimal temperature range. This is not persuasive for the reasons above.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward M. Johnson whose telephone number is 571-272-1352. The examiner can normally be reached on M-F 9:30-6:00.



If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Edward M. Johnson  
Primary Examiner  
Art Unit 1754

EMJ